

# Household out-of-pocket expenditure on health care - A cross-sectional study among urban and rural households, Puducherry

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## ABSTRACT

**Context:** A major proportion of health expenditure is by households as out-of-pocket expenditure (OOPE) in India. Recent estimates at district level are required for planning implementation of Universal Health Coverage. **Aims:** To estimate the proportion of households incurring OOPE and the average amount spent by the household for healthcare. **Settings and Design:** A cross-sectional study was conducted during August 2016 in the field practice areas of a medical college in Puducherry. A random sample of 240 households (120 rural and 120 urban) with 1,029 participants (531 rural and 498 urban) were surveyed. **Subjects and Methods:** A pretested questionnaire was used to collect information on sociodemographic details, morbidity, healthcare services utilized, and expenses incurred. Recall period of 1 month was fixed for OP/Pharmacy Services and 6 months for IP services. **Results:** In total, 120 rural and 120 urban households were surveyed; out of which, majority of the households were below poverty line [rural (83.3%,  $n = 100$ ), urban (69.2%,  $n = 83$ )] and belonged to other backward classes [rural (60.8%,  $n = 73$ ), urban (83.3%,  $n = 100$ )]. The proportion (95% CI) of households which incurred OOPE was 68.3% (59.5%–76%) in rural and 65.8% (57%–73.7%) in urban areas. The median (inter quartile range) proportion of OOPE out of the household budget was 3.31% (0.4%–10.96%) in rural and 5.15% (0.83%–16.3%) in urban areas. **Conclusions:** Even in a resource rich setting as the selected areas of Puducherry, majority of the households (67%) reported OOPE. The study estimates are lesser than the national estimates, but the availability and accessibility of resources are higher in Puducherry compared with the other parts of country.

**Keywords:** Hospitalization, household, out-of-pocket expenditure, outpatient care, over-the-counter, Puducherry

## Introduction

The National Health Authority of India is on the process of implementing Pradhan Mantri Jan Arogya Yojana (PM-JAY) or ‘Ayushman Bharat’ aiming at providing quality health care to all citizens at an affordable rate with reducing out-of-pocket expenditures (OOPEs) through cashless services.<sup>[1]</sup> National Health Accounts (2016) estimate that 64.2% of the total health expenditure (THE) is by households as out-of-pocket payments. Even though the burden of OOPE decreased from 2004 to 2005

estimate (71% of THE), it still remains unacceptably high.<sup>[2]</sup> In an age of aspiration for Universal Health Coverage, households need to be freed from the burden of spending for health at the point of time when they are most vulnerable.<sup>[3]</sup>

A study done in 2014 on examining the trends of burden of OOPE across different social groups estimated that the financial burden on households due to OOP spending increased over period of time, with the burden more in rural area. The Proportion of households that reported spending out-of-pocket on health rose from 64% (2005) to 81% (2012) in rural area and from 65% (2005) to 78% (2012) in urban area. Also, OOPE as a share (%) of total household expenditure was higher in rural

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areas - 6.34% (2005) and 7.73% (2012) compared with urban areas - 5.05% (2005) and 5.74% (2012).<sup>[4]</sup>

The Union Territory of Puducherry is considered to have an easily accessible healthcare delivery system with an efficient network of public healthcare facilities, i.e., Health Sub Centres, PHCs, Disease specific clinics, and around eight medical colleges and hospitals resulting in provision of accessible health care within 1.18 km on an average. The public per capita expenditure on health in Pondicherry is four times that of national average.<sup>[5]</sup> Two previous studies from Puducherry have tried to measure the extent of OOPE. Varadarajan *et al.* (2013) reported that 81% of study households incurred OOPE.<sup>[6]</sup> Archana *et al.* (2014) reported that among the OP visits, 31% incurred OOPE.<sup>[7]</sup>

Studies on OOPE in recent years in Indian context are limited, especially with urban–rural differentials at a district level. OOPE estimates vary from time to time as a result of epidemiological trends, changes in health-seeking behavior, and changes in accessibility of health services and inflation. Hence, periodic assessment is needed to monitor trends and distribution of OOPE. Also, as the country proceeds toward Universal Health Coverage, local level estimates are needed to build evidence base. This paper aims to assess the burden of OOPE among the selected rural and urban households in Puducherry.

## Subjects and Methods

A cross-sectional household survey was conducted in selected urban and rural areas in field practice areas of a medical college in Puducherry during August–September 2016. The Urban Health Centre is located in one of the urban slum areas of Pondicherry catering to a population of 9,437. The Rural Health Centre caters to a population of 9,101 in four villages. Both the centers provide primary care free of cost including OPD services, 24 × 7 emergency services (in Rural Health Center), and special clinics.

Enumeration registers containing the details of each household maintained in both the centers served as the sampling frame. Sample size was estimated to be 204 (102 in each group) with  $\alpha$ -error of 5%, estimation of households incurring OOPE to be 78%<sup>[8]</sup> and absolute precision 8%. Considering the possible 20% nonresponse, sample size was fixed as 120 in each group. Enumeration registers maintained at the health centers served as sample frame. Using computer-generated random numbers, 120 households each from both rural and urban areas were selected using simple random technique.

The interview schedule was modelled on 71<sup>st</sup> round of NSSO questionnaire.<sup>[9]</sup> It collected information on sociodemographic details, monthly expenditure data for food and non-food items, and morbidity profile of household members. Details on health expenditure were collected separately for each member including in-patient (IP), outpatient (OP), and over-the-counter (OTC) medication. Along with direct health costs such as doctor's consultation fee, medicine charges, laboratory and other

diagnostic charges, room/ward rents, and direct nonhealth costs such as travel charges and food charges, were captured. Appropriate probes were used wherever necessary to capture the data with maximum accuracy. A recall period of 1 month was chosen for OP visits and 6 months for IP care considering sample size and chance of occurrence of unexpected adverse events. Data on health insurance coverage of the household was also collected. The data was collected from head of the household after taking written informed consent. The study was approved by Institute Ethics Committee. The privacy of respondents was respected and confidentiality was maintained up to full extent.

Data entry was done with Microsoft Excel 2010 and analysis was done using IBM SPSS v. 20.

Categorical variables were expressed as proportions and the continuous variables as mean (standard deviation) or median [inter quartile range (IQR)]. To understand the components of expenditure incurring due to medical care, we split up the expenditure into various heads such as direct and indirect medical expenditure and further into doctor's fee, medicines cost, interventions cost, etc., they were expressed as proportions of total OOPE for rural and urban separately. Average OOPE was expressed in both absolute amount (in INR) and as a proportion of household budget.

## Results

Out of 240 households (rural - 120, urban - 120) surveyed, details about 1,029 individuals (rural - 531, urban - 498) were collected. Majority of the households were below poverty line [rural (83.3%,  $n = 100$ ), urban (69.2%,  $n = 83$ )] and belonged to other backward classes [rural (60.8%,  $n = 73$ ), urban (83.3%,  $n = 100$ )]. The sociodemographic characteristics of the study households are given in Table 1.

Among both rural and urban households, 80% reported as at least one member having any one episode of illness or condition requiring medical attention within past 1 month (rural,  $n = 97$  and urban,  $n = 96$ ). There were a total of 183 illness episodes reported in rural area and 156 in urban area. In rural area, highest proportion (21.2%,  $n = 39$ ) of ailments reported was of respiratory disorders (wheezing, common cold). In urban areas, it was diabetes (25%,  $n = 39$ ) and cardiovascular disorders, such as hypertension (25.6%,  $n = 40$ ).

Among the 120 rural and 120 urban households surveyed, 100 (83.3%) rural and 103 (85.8%) urban households reported to have availed IP/OP/Pharmacy services at some time during the reference period. The percentages of households which availed IP/OP/Pharmacy services and OOPE incurred from them are given for urban and rural households separately [Figures 1 and 2].

In total, 161 households (67.1%) reported as having incurred OOPE at the time of survey. This proportion (95% CI) was

68.3% (59.5%–76%) in rural and 65.8% (57%–73.7%) in urban areas, respectively. The average annual amount incurred as OOPE<sup>2]</sup> by rural and urban households Pharmacy, OP care, and IP care and the average annual amount incurred in each of these are given in Table 2. The representation of overall household expenditure is given in box plot [Figure 3].

On an average (median proportion, IQR), the rural households spent 3.31% (0.4%–10.9%) of their household budget as OOPE, whereas urban households spent 5.15% (0.83%–16.3%).

Among all the OP visits, 60% of visits in both urban and rural areas led to some kind of OOPE and 40% visits were done without incurring any cost. The average median (IQR) OOPE expenses per OP visit among those who incurred OOPE expenses was INR 210 (INR 24–INR 530) in rural areas and INR 504 (INR 50–INR 906) in urban areas. All hospitalization episodes incurred OOPE except one event in the rural area. The

overall average median (IQR) OOPE per event of hospitalization was INR 104 (INR 7–INR 1,760). In rural areas, it was INR 450 (INR 25–INR 4,612), and in urban areas, INR 100 (INR 4–INR 200).

**Table 1: Sociodemographic characteristics of study households in rural and urban field practice areas of JIPMER, 2016 (n, rural=120, urban=120)**

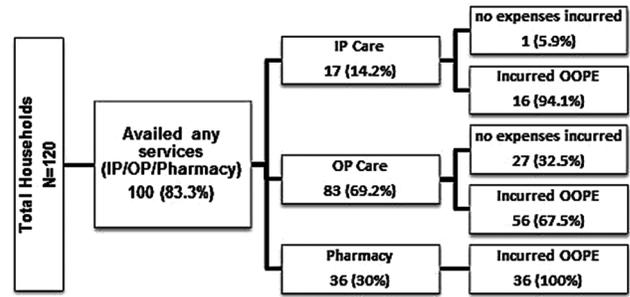
| Characteristics   | Rural, n (%)         | Urban, n (%)         |
|---|----------------------|----------------------|
| Religion  |                      |                      |
| Hindu   | 114 (95)             | 114 (95)             |
| Christian   | 6 (5)                | 6 (5)                |
| Caste   |                      |                      |
| General   | 6 (5)                | 7 (5.8)              |
| Scheduled Caste   | 41 (34.2)            | 13 (10.8)            |
| Other Backward Castes <sup>#</sup>                      | 73 (60.8)            | 100 (83.3)           |
| APL/BPL status  |                      |                      |
| APL (above poverty line)                                | 18 (15)              | 35 (29.2)            |
| BPL (below poverty line)                                | 100 (83.3)           | 83 (69.2)            |
| Ration card not present                                 | 2 (1.7)              | 2 (1.7)              |
| Presence of child* (<5 years)                           | 29 (24.2)            | 22 (18.3)            |
| Presence of pregnant woman*                             | 6 (5)                | 3 (2.5)              |
| Presence of elderly* (≥60 years)                        | 44 (36.7)            | 52 (43.3)            |
| Presence of disability*                                 | 4 (3.3)              | 3 (2.5)              |
| Covered by any health insurance*                        | 3 (2.3)              | 2 (1.7)              |
| Median monthly per capita income (inter quartile range) | ₹2,387 (1,507-3,552) | ₹2,000 (1,281-3,000) |

\*presence of any household member <sup>#</sup>Backward Classes-Other Backward Classes (OBC), Most Backward Classes (MBC), Extremely Backward Classes (EBC)

**Table 2: Average Annual Household OOPE amount among rural and urban households which incurred any OOPE during the reference period, 2016**

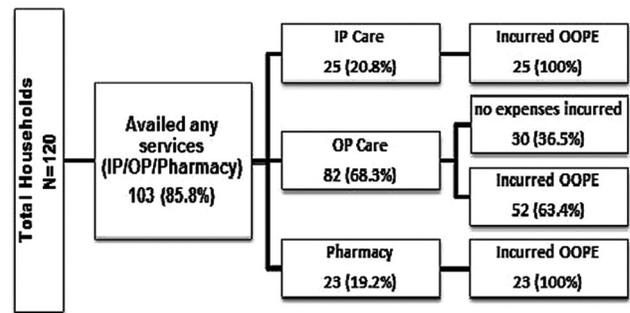
| Type of care availed                    | Median (IQR) amount of OOPE in ₹ |                      |
|---|----------------------------------|----------------------|
|   | Rural                            | Urban                |
| Pharmacy                                | 1,200 (750-3,600)                | 4,800 (3,000-24,000) |
| OP care                                 | 5,448 (360-11,232)               | 7,020 (690-19,404)   |
| IP care                                 | 2,720 (102-13,506)               | 220 (20-1,300)       |
| Overall <sup>#</sup> (Pharmacy, OP, IP) | 3,348 (600-13,368)               | 4,824 (600-2,400)    |

\*Overall Annual Household OOPE calculated as (2 × OOPE in IP) + (12 × (OOPE in OP+OOPE in Pharmacy medication)) <sup>#</sup>Multiple response possible; OP=outpatient, IP=in-patient, OOPE=out-of-pocket expenditure, IQR=inter quartile range



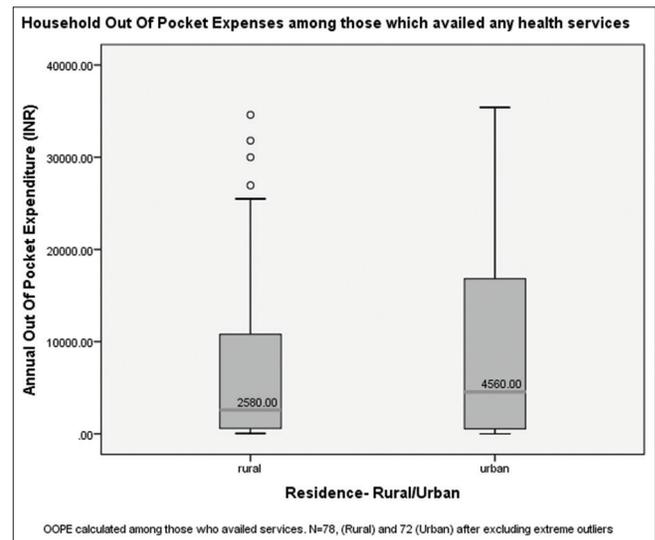
Note. Multiple responses possible in 'services availed'  
OOPE- Out Of Pocket Expenditure, OP- Out Patient, IP- In Patient

**Figure 1: Utilization of health services and “out-of-pocket” expenses incurred by selected rural households**



Note. Multiple responses possible in 'services availed'  
OOPE- Out Of Pocket Expenditure, OP- Out Patient, IP- In Patient

**Figure 2: Utilization of health services and “out-of-pocket” expenses incurred by selected urban households**



**Figure 3: Box Plot on Annual “out-of-pocket” expenses incurred by rural and urban households**

It was found that medicines were the single largest component of expenditure in rural (80%) and urban areas (76%) for IP, OP, and Pharmacy visits. Doctor's consultation fee contributed to second largest proportion of expenses; 10% in rural area, and 14% in urban area. Figures 4 and 5 show the proportion of each component contributed to OOPE by rural and urban households.

### Discussion

In this study, a total of 67.1% households ( $n = 161$ ) reported as having incurred OOPE at the time of survey. This proportion (95% CI) was 68.3% (59.5%–76%) in rural and 65.8% (57%–73.7%) in urban areas, respectively. In our study, on an average (median (IQR)), the rural households spent 3.31% (0.4%–10.96%) of their household budget as OOPE, whereas urban households spent 5.15% (0.83%–16.3%).

Similar results of proportion of households incurring OOPE (65%) were reported from Sri Lanka,<sup>[10]</sup> which has a strong provision of public health system. But the difference here is that “user fees” exist in public health facilities in Sri Lanka, which would have resulted in higher proportion of households incurring OOPE, since the utilization rates are higher there. But in the setting of this study, even though there is provisioning of care free of cost through the health centers, more than half of households incurred OOPE. At the national level, the NSSO-71<sup>st</sup> round data<sup>[9]</sup> (which is the base of National Health Accounts estimates - 2013–2014) estimated cost of care as OOPE in individual level and event level (OP visit/hospitalization/childbirth) only. Thus, even though we know that 64% of the total health expenditure comes through OOPE, the proportion of households which incurred these expenses was not available. Our study estimates are lesser than the national estimates by Karan *et al.*,<sup>[4]</sup> but the availability and accessibility of resources are higher in Puducherry compared with the other parts of country. Local estimates from Puducherry widely differed due to the differences in setting and methodology. Varadarajan *et al.* from a study in rural Puducherry reported that 81% of households incurred OOPE.<sup>[6]</sup> But Archana *et al.* on studying OOPE in the same setting reported that majority of the OP visits (69%) did not incur any OOPE.<sup>[7]</sup>

Since expression of economic quantities in absolute figures does not give the idea of financial burden, it could not be used for comparison. Hence, we have used the expression of OOPE as a share of total household consumption in order to compare with other studies. A similar estimate to our study was reported from South Africa from a setting similar to this study helping us to draw comparisons.<sup>[11]</sup> Various other studies from low-middle income countries and national estimates have also given similar figures.<sup>[12-15]</sup>

Cost of medicines accounted for the larger share of OOPE (rural - 80% and urban - 76%), which was in accordance with various other studies.<sup>[2,16,17]</sup> The national estimates from NHA were similar to our results. It was mentioned that “medicines is the single largest contributor health care costs, the proportion ranging from 38-66%. In public healthcare facilities, doctor's fee was another critical component. In public sector, the major reason for the expenditure on drugs is non-availability.” Shahrawat and Rao<sup>[16]</sup> on analyzing 61<sup>st</sup> round of CES reported that medicines contributed 72% of total costs. This underlines the importance of an efficient drug procurement and distribution system, mediated by public administration. The cost cutting measures involve regulation and rational prescription practices which have policy implications.

Literature suggests that rising OOPE even deter sick individuals from seeking care.<sup>[18]</sup> In our study, among the participants who reported episodes of illness, no regular medical help was sought for 25 (14.2%) and 14 (9%) episodes in rural and urban areas, respectively. In those instances, “OTC” medication, help from relatives, home remedy, or no action was adopted.

The study was conducted in a setting which was the service area of health centers that provide primary care. OOPE form a barrier for the families to seek timely primary care, which could have prevented further complications and expenses in future. The recent interventions of the Government in health sector including “Ayushman Bharat” focus on controlling secondary and tertiary care expenses, whereas it is also important to consider making primary care accessible and affordable as shown in this study.

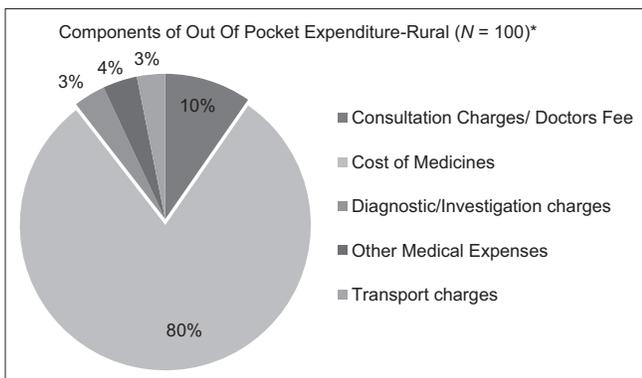


Figure 4: Annual “out-of-pocket” expenses incurred by rural households

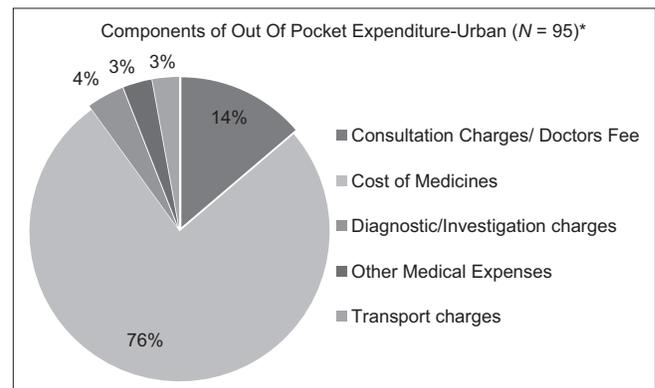


Figure 5: Annual “out-of-pocket” expenses incurred by urban households

The study has the following limitations. As it is a cross-sectional study, there will be obvious errors in collecting expenditure details for a shorter reference period and multiplying and projecting that to annual estimates. Expecting health events, particularly OP events, and acute illness episodes to occur throughout the year in the same frequency as the past month is not correct and it may overestimate the results. Also, we cannot account for seasonal variations and trends in diseases in this way. So, for assessing the actual health events and expenditure of a household, ideally we should adopt a longitudinal panel survey. But since it was not feasible to study for a long duration in this project, cross-sectional design was adopted. Recall bias could have happened since the participants were asked to recall the amount they had spent for health care. It is quite possible that those who had severe diseases and higher expenditures recall the exact figures, whereas milder diseases and lower expenditures would have forgotten. The researcher has tried to minimize this by using appropriate probes to collect information accurately. In general, as any other economic study, there was a tendency of participants to report expenditures in round figures, often guess estimates. Here also, effort was taken to minimize this error and capture information as accurately as possible by comparing with bills, invoices, etc., wherever possible.

## Conclusion

Even in a resource-rich setting in Pondicherry, more than half of the households had to spend for health care “out of pocket” that amounted to around 3% and 5% of their household budgets in rural and urban areas, respectively. Judicious adoption of cost cutting measures through policy measures and operational changes in public health provisioning are needed to realize the goal of “zero OOPE” as in Universal Health Coverage.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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